M/021/008
Palladon Master

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State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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July 28, 1995

CERTIFIED RETURN RECEIPT
P 074 978 949

Roy Benson
Geneva Steel
10 South Geneva Road
Vineyard, Utah 84058

Re: Final Approval of Form and Amount of Reclamation Surety, Geneva Steel, Iron Mountain Mine, M/021/008, Iron County, Utah

Dear Mr. Benson:

On April 26, 1995, the Board of Oil, Gas and Mining conditionally approved the form and amount ($990,000) of replacement reclamation surety for Geneva Steel's Iron Mountain mine. The reclamation surety is in the form of a Surety Bond (#400 HR 7285) issued by Saint Paul Fire and Marine Insurance Company. Because of a number of unforeseen delays in working out the final surety bond details (i.e., amendments & riders) we were not able to obtain final Board sign off on the bond and Reclamation Contract until recently. The Division is now able to grant its final approval of the revised reclamation surety.

Enclosed please find copies of the fully signed and executed Reclamation Contract and surety bond forms for your files with the effective date of July 26, 1995, for Geneva Steel's recently consolidated mine plan/permit application.

Geneva Steel is hereby released from the Self Bonding and Indemnity Agreement for the Comstock/Iron Mountain permit that was received by this Division October 8, 1991. Enclosed are the original copies of the Self Bonding and Indemnity Agreement along with the Interim Reclamation Contract with the effective date of October 9, 1991.

We are also returning an old Reclamation Contract with the effective date of March 23, 1989, for the Iron Mountain mine. The original surety that accompanied this Reclamation Contract was returned to Clayton Parr on October 16, 1991.

As you will recall, the Division's tentative approval required Geneva Steel's commitment to identify and reclaim approximately 6.6 acres of prelaw disturbance, as mitigation for portions of more recently disturbed areas that are subject to an approved revegetation variance. We would like to set up a tentative date and time to meet onsite with you to select the mitigation area(s) and discuss a timeframe for performing the reclamation. We suggest meeting sometime this fall, preferably in September or October 1995. Please contact our office at your earliest convenience to schedule an acceptable date to resolve this permit condition.

Thank you for your continued cooperation and patience in completing the permitting of Geneva's consolidated and revised permit application. It has been a pleasure working with you, Jerry and Lance.

Sincerely,

D. Wayne Hedberg
Permit Supervisor
Minerals Regulatory Program

jb
Enclosures:
original RC 3/23/89; original RC & Self Bonding & Indemnity Agreement 10/8/91;
copy RC & surety bond 7/26/95
cc: Gina Pack, BLM, Beaver River RA w/1995 RC & Surety encl
Walter Phelps, BLM, State Office w/1995 RC & Surety encl
M021008.apv

GENEVA STEEL
P.O. BOX 2500
PROVO, UTAH 84603
TELEPHONE: (801) 227-8000
FAX: (801) 227-8090

Palladon Master/06
95-0100.ENV

April 10, 1995

Mr. D. Wayne Hedberg
Division of Oil, Gas and Mining
Dept. of Natural Resources
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, UT 84180-1203

RE: Final Application for Revision and Amendment to Iron Mountain Reclamation Permit M/021/008

Dear Mr. Hedberg:

Included with this letter is the Final Application for Revision and Amendment to Geneva's current Iron Mountain Reclamation Permit (M/021/008). Grammatical and spelling errors in the text of the March 21st Updated Application have been corrected. A set of final drawings is included. Please dispose of all previous map revisions.

Also included are draft copies of the Reclamation Contract and Surety Bond documents for your review. Lance Hale will call you later this week to get your comments.

If you have any further questions or requests concerning this information, please contact Roy Benson at (801) 227-9782 or Lance Hale at (801) 227-9252.

Sincerely,

K.C. Shaw, P.E.
Chief Engineer - Environment

KCS:LDH:mr
Enclosure
cc: Roy Benson, w/o enclosure
Richard Clayton, w/o enclosure

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Palladon Master/06

REVISED

MINING AND RECLAMATION

PERMIT APPLICATION

(Prior Permit No. M/021/008)

FOR THE

IRON MOUNTAIN MINING

DISTRICT

NEAR CEDAR CITY, UTAH

April 6, 1995

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MINING AND RECLAMATION PROGRAM
IRON MINES NEAR CEDAR CITY, UT
GENEVA STEEL - APRIL 1995

1.0 INTRODUCTION

1.1 BACKGROUND

In 1987, Geneva Steel acquired rights to the iron ore deposits located about 25 miles west of Cedar City in Southern Utah from U.S. Steel. Since that time, Geneva Steel has also acquired additional iron ore deposits in the area from CF&I and BHP--Utah International.

The current operation consists of several large open-pit mines, processing areas and mine waste dumps. The ore is predominately magnetite with hematite in Cretaceous/Jurassic host rocks located adjacent to Tertiary igneous intrusive. Ore production is near 835,000 tons annually. Waste material production is 700,000 cubic yards annually. The ore is shipped to Geneva Steel's steel milling operation near Orem, Utah.

By submittal of this permit revision as specified in Utah Administrative Code (1993) R647-4-118 (herein referred to as Amended Application), Geneva Steel has consolidated existing reclamation plans filed by previous owners to encompass current and future mining plans. Also, Geneva is seeking permits on additional areas not previously permitted, and this submission will also serve as an application for revision for those areas. Studies performed for this application have included evaluations of area soils, vegetation, surface/subsurface hydrology, geology, slope stability and waste dump characteristics in accordance with

the rules of the Minerals Reclamation Program of the Division of Oil, Gas and Mining of the State of Utah. Reclamation work already performed by previous owners on adjacent abandoned properties was also evaluated.

1.2 PREVIOUS PERMITS/APPLICANTS

The following Division of Oil, Gas and Mining (DOGM) mining reclamation/operating permits were issued to different operators in the past covering areas which are now controlled by Geneva Steel:

Permit Name	Original Applicant	DOGM Identification Number
Cedar City Iron Mine	Utah International Inc.	M/021/001 (remainder transferred into M/021/008)
Desert Mound Mine	USX Diversified Group	M/021/003 (remainder transferred into M/021/008)
Comstock, Blowout & Duncan	CF & I	M/021/005
Iron Mountain	Geneva Steel	M/021/008
Excelsior/Chesapeake	Geneva Steel	S/021/010 (prior existing permit to be transferred into M/021/008)

This document, together with the completed DOGM Form in Appendix C will serve as an application for revision to extend the scope of the existing permits to cover additional areas currently disturbed and will also include areas to be disturbed within the next five years. As instructed by DOGM personnel, this revision and all future revisions will be attached to the Iron Mountain Mining Permit (M/021/008). This

Amended Application is not a replacement for these valid existing prior permits, but serves to place them in a combined format under M/021/008 as to clarify the current reclamation status of the entire project area.

1.3 PROJECT LOCATION/DESCRIPTION

The Iron Mountain and Comstock iron ore mining areas are currently being mined by Geneva Steel under contract to Gilbert Development Company, Inc. Previous owner/operators in the district, CF&I, BHP-Utah International, and U.S. Steel, extracted ore from the now abandoned Iron Springs, Granite Mountain, Desert Mound, and Three Peaks deposits located about 20 miles to the northeast of the currently active areas. Utah International and U.S. Steel also conducted the initial and in some cases final mining in the Comstock and adjacent Mt. Lion pits, plus in most of the Blowout, Burke, Duncan, Pinto, and Blackhawk pits, all located in the Iron Mountain district. Drawing IM-0100-6 represents the Topographic Base Map of the area and shows the location of the mining districts, pits, and other site relationships. Figure 1 and 2 of this text are air photos that show these features in oblique perspective.

Access to the mining areas is from Utah Highway 56 which runs east-west to the south of the area as shown on Drawing IM-0100-6. Drawings Im-0100-4, Sheets 1 and 2, are Facility Maps which show on-site facilities and other features required for the Amended Application.

All major past and present mining was accomplished by open pit techniques. There are no underground mines in the area. Comparatively large mine waste dumps exist near the open pit mines, some being over 100 feet high. Low grade ore piles also exist as do old waste dumps which have already been reclaimed by past owner/operators under then existing permit regulations. No hazardous or toxic waste dumps or piles exist in the area.

Geologic, soil, and vegetative studies have been completed in the active mining area and in areas where mines have been abandoned prior to the Reclamation Act of 1975. Both surface drainage and groundwater studies have also been conducted to determine background conditions so that assessment of potential impacts could be made owing to currently active and recently abandoned areas. The seismic conditions in the immediate area and adjacent vicinity have also been evaluated. Slope stability concerns were also addressed. A discussion of these studies is included in this Amended Application. A description of the historic, existing and future mining operations is also included, complete with estimated ore types, tonnages and affected ore bodies.

Studies were performed as to potential impact on public health and safety with the results being incorporated into the mining and reclamation plan. Actual reclamation plans complete with figures and photos are included which outline the plans in accordance with the Minerals Reclamation Program of the Division of Oil, Gas and Mining (DOGM) of the State of Utah.

A listing of variances applied for is also included as Section 12.3 of the Amended Application based on site specific conditions, post-mining activities and future plans.

1.4 PROPERTY OWNERSHIP

The mining operations covered by this application occur within a larger block of lands owned by Geneva Steel. Geneva Steel is the primary surface and mineral owner of Sections 19, 20 and 29, 30, 31, and 32 in T.36S., R.13W., Sections 25, 26, 27, 34, 35, and 36 in T.36S., R.14W., and Sections 1,2 and 3 in T.37S., R.14W., of the Salt Lake Base and Meridian as shown on Drawing IM-0100-10. As can be seen from the drawing, most of the Geneva ownership is by clear or leased fee title with other lands existing as unpatented mining claims on Federal Lands (USBLM). Geneva also has a 50 percent lease on certain privately owned lands shown on the drawing. In addition, easement rights on the FAA road are owned

by the FAA under leases with the various property owners. The upper part of the FAA road which extends from the FAA tower turnoff to the radio tower is operated under a license agreement with TAC-TEC corporation. Geneva, under FAA instructions, has performed reclamation work on the road acceptable to the FAA. Geneva will be unable to do any further reclamation work on the portion of the road covered by the FAA easement without the express written consent of the FAA. Contingent upon FAA approval, and with the agreement of the Division on which areas reclamation might be successful, Geneva will hydroseed the outslopes and road cuts along the road.

The USBLM owns much of the lands not owned/leased by Geneva and others in Sections 25, 35 and 36 of T.36S., R.14W., with the exception of the U.I./U.C. placer claims in Sections 1,2 and 3 of T.37S., R.14W. and in Section 18 of T.36S., R13W., all other private claims are believed to be patented. Geneva also has location rights on the unpatented S.U.O.P., Raven and Mary Jean claims and joint ownership on the Cincinnati No. 4 and others also in Section 27 and 28, T.36 S. R.14W. Geneva has fee title/lease rights to properties in Section 29, T36S., R13W. which is used for mineral processing facilities.

2.0 PRE-ACT DISTURBANCES

All mining disturbances existing prior to the State of Utah Mining Reclamation Act (Title 40-8, Utah Code Annotated 1953, effective May 14, 1975) are not subject to reclamation under the Act. These areas and existing reclaimed areas are identified on Drawing IM-0100-9. The areas were identified by prior permit references, old aerial photos, and operator knowledge. Identification of prior disturbed areas is also important in justifying variances for operations currently taking place, as most resource values (top soil, vegetation, etc.) were non-existent when operations commenced making reclamation variances necessary. Drawings IM-0100-3F delineate Post-Act disturbed areas and Pre-Act redisturbed as well as other Pre-Act disturbed areas as appropriate.

As can be seen on the drawing, the majority of the disturbances in the area were Pre-Act, which is to be

expected considering the long history and extensive mining of this district. Geneva Steel will attempt reclamation on these areas where its operations have been established on Pre-Act disturbances, as specified in prior permits.

3.0 HISTORY

Iron ores in Utah were first discovered in 1849 in the Pinto and Iron Springs district in Iron County. Some production began soon after, but major iron production from this district began in 1923. During the past half century, the Iron Springs district became the largest iron-producing district in the western states. The Utah iron mining industry can be divided into five stages in time over the past 143 years as follows:

The first stage, from 1849 through 1884, marked by Mormon pioneer efforts to produce iron from Iron County deposits failed primarily because of lack of funds and good coking coals and of competition of cheaper imported iron products after the completion of the transcontinental railroad through Utah. Only a few thousand tons of iron ore were mined and processed into finished products.

The second stage started about 1869 when the railroads came to Utah and continued until about 1922. This marked the development of the nonferrous mining industry in Utah and the use of iron ores, chiefly limonite gossans, for fluxing purposes in the smelting of lead, copper, zinc, silver and gold ores. Several hundred thousand tons of fluxing iron ores were used during this time by Utah smelters.

The third stage of iron mining in the State, the Ironton Works stage, was a 20-year period from 1923 to 1942, marked by the completion of the Ironton blast furnace near Provo. Ore production from Iron Springs district averaged 230,585 long tons annually, all of it shipped to Ironton. Iron mining was conducted by Utah Iron Ore Corporation and Columbia Iron Mining Company (CIMC) during this period.

The fourth stage began with World War II and extended to 1961 with the wartime construction of the steel plant near Orem known as the Geneva Works and owned by the U.S. Steel Corporation. Production in the Iron Springs district averaged 3,108,820 long tons annually during this time. CIMC, a subsidiary of U.S. Steel, greatly increased its shipments of ore to the Geneva and Ironton Works. CF&I Steel Corporation also began production from its properties in the Iron Springs district in 1943 and made shipments of ore to its furnaces at the Minnequa Works, Pueblo, Colorado. Utah Construction and Mining Company started independent iron ore production from its properties in 1944 from the Iron Springs district. Its principal sales were made to the Kaiser Works at Fontana, California, and later to foreign markets. In 1958, they made a long-term contract to U.S. Steel to ship ore to the Geneva Works.

In the fifth stage, after 1961, iron ore production from the Iron Springs district was curtailed due to use of taconite ores from U.S. Steel Corporation's operation in Wyoming. Taconite ores continued to compete with iron ore production in the Pinto/Iron Springs district since taconite concentrates average more than 60 percent iron content and Pinto/Iron Springs district ores averaged only about 52.7 percent.

Ore production in the district from 1923 through 1986 prior to purchase by Basic Manufacturing Technologies, Inc. (Geneva Steel) was about 72 million long tons of iron ore. Production since 1987 has been near 850,000 tons per year. The district continues to be the only major iron producing district in Utah and the Intermountain West. The estimate of ore potential, based on drilling operations, geophysical data and geologic information, still exceeds 300 million tons, including additional ore bodies that have not been mined to date.

4.0 SEISMIC CONDITIONS

Earthquake epicenters in Utah and the site vicinity are shown on Figure 3 based on 1978 data from the University of Utah Seismograph Center in Salt Lake City, Utah. A magnitude event range from 2.5 to about 4.0 on the Richter Scale is shown for a 50-mile radius of the site. More recent data recorded in April to June 1991 showed two events in the 2.5 to 3.0 range just north and about 25 miles southwest of Cedar City as shown on Figure 3.

Figure 4 shows a seismic risk map of Utah complied by the Utah Seismic Safety Advisory Counsel in 1991. The map shows the boundaries of the various seismic zone designations throughout the State. These designations range between U-1 to U-3 and correspond to seismic zones identified in the Uniform Building Code (UBC). The U-4 zone is the most stringent zone and was recently proposed as an addition to the UBC but was not approved.

The general project area has been placed within the U-2 zone of seismic risk indicating a moderate earthquake hazard. No recorded damage to mining operations from seismic activity has been reported in the history of the district.

5.0 GEOLOGIC SETTING

5.1 GENERAL

The Iron Springs and Iron Mountain (previously the Pinto), mining districts are located approximately 20 miles west of Cedar City, Utah, in Iron County. The district is located in the Eastern Great Basin and Range province in southwestern Utah, approximately 20 miles west of the Markagunt Plateau and Hurricane fault scarp which form the western boundary of the Colorado Plateau province.

Three quartz monzonite porphyry intrusive (plutons) are exposed at the surface and form the dominant topographic features of the district. They are identified as Three Peaks, Granite Mountain, and Iron Mountain. A fourth intrusive which may represent a down faulted segment of the Granite Mountain intrusive exists at a depth of 900 + feet below the surface between the Granite and Iron Mountain intrusive in the area known as the "Neck-of-the-Desert." The intrusives have tilted nearby Eocene volcanic rocks and are assigned an early Tertiary age. (Rowley and Barker, 1973). Figure 5 illustrates the general geologic features of the area.

The iron mining district of southwestern Utah is the largest iron district in the western United States. The district is part of a regional northeast-trending belt, about 62 miles long, of similar shallow, concordant intrusions, most of which have been prospected for iron.

Jurassic and Cretaceous sedimentary rocks flank the intrusive bodies. The margins of the Iron Mountain and Granite Mountain intrusive are complexity folded and faulted. Only the western margin of the Three Peaks intrusive displays a concordant contact. The eastern margin of this intrusive body has been cut-off by the large East Fault, thus the condition of this flank is unknown. The sedimentary rocks have been involved in a complex structural history that pre-dates and post-dates the intrusive activity. With perhaps the exception of Three Peaks, the other intrusive of the district should be classified as bysmaliths as suggested by Mackin (1947), p. 52).

The magma that formed the intrusions was localized by a bedding-plane fault of the Sevier thrust system and was emplaced along a bedding plane at or near the base of the Carmel Formation (Middle Jurassic) and above the Navajo Sandstone (Lower Jurassic and Upper Triassic?). The magma then bulged up the overlying rocks so that they dip radially away from the central intrusion. This pattern, however, is locally modified, particularly at the Iron Mountain pluton, by steeply dipping reverse faults related to intrusive uplift and by younger Basin-Range normal faults (Rowley and Barker, 1978). Drawing IM-0100-8 shows

these features in relationship to the existing open pit mining areas. Drawing IM-0100-7 shows the geologic column.

The district provides one of the few places where the source of the mineralizing fluid can be traced. Field relations indicate that iron was leached by daturic fluids out of ferromagnesian minerals in crystal mush of the intrusions shortly after emplacement. These fluids were tapped by extension joints that penetrated through the outer crystallized shell into the crystal mush interior. The daturic release hypothesis was proposed by the late J. Hoover Mackin, 1947, 1954, 1960, 1968; Mackin and Ingerson, 1960.

5.2 STRATIGRAPHY

Other formations existing in the Iron Mountain district besides the Jurassic and Cretaceous sedimentary rocks are the Marshall Creek Breccia, Iron Springs Formation (sandstone, shale, conglomerate and coal), Clarion Formation (fluvial and lacustrine sandstone and limestone) and overlying varying layers of volcanic extrusive of late Tertiary age consisting of purple, gray, to reddish-pink ash, pumice, and welded tufts.

Surficial deposits cover most of the area and include partly consolidated very thick upper Tertiary and lower Quaternary clastic sediments that fill deep grabens (Cook and Hardman, 1967) in Cedar Valley to the east and Escalante Desert to the northwest. Most surficial deposits, however, are pediment and subordinate fan deposits of Quaternary age. Neck-of-the Desert and much of the lowland west of the Granite Mountain and The Three Peaks plutons are erosional, not structural, and are underlain by pediment deposits that truncate soft rocks of the Iron Springs Formation; plutonic rock occurs at depth under these areas (Mackin, 1968).

5.3 STRUCTURE

Rowley and Barker (1978) indicate that district lies near the eastern edge of the Sevier Belt thrusting of Cretaceous age. Anticlines and thrust faults are exposed at various localities extending from the Bull Valley Mountains northeast through the Iron Springs district to the Red Hills. A thrust fault of this single fault system is exposed in the gap of Iron Springs, south of the Three Peaks pluton (Mackin, 1947; Mackin and others, 1976). Here an overturned anticline in the Homestake Member has been thrust southeastward over the Iron Springs Formation. The Claron Formation exists as an angular unconformity over the Iron Springs member. The thrust fault also is exposed on the eastern side of the Iron Mountain pluton.

The Sevier thrust system parallels--and controls--the string of plutons. The major plane is the same as in numerous other places in southern Nevada and western Utah, namely, above the massive Navajo Sandstone and within incompetent beds in the base of the Carmel Formation. Magma appears to have been inserted above the Navajo and below the thrust block and subsequently bulged the roof rocks at the location where the thrust cut up through the section (Mackin, 1947).

Most high-angle faults near the plutons are reverse faults that formed as magma was emplaced. These intrusion-related faults are abundant in the Iron Mountain pluton, less abundant in the Granite Mountain pluton, and least abundant in The Three Peaks pluton. Faults with strike-slip components are not common, although the Woolsey Ranch fault bounding the southern edge of the Swett Hills may have some left-lateral displacement, formed when the Iron Springs pluton shouldered aside its eastern flank (Blank and Mackin, 1967); most of the displacement on this fault, however, is dip slip, down to the north.

Basin-Range normal faults include the East fault, which dropped the eastern side of The Three Peaks pluton down toward Cedar Valley, and a fault zone with the same sense of displacement east of the Swett Hills-Eight Mile Hills. Most, if not all, of the Basin-Range faults postdate the faults that are related to intrusion. Basin-Range faults are more abundant off the flanks of the intrusive arch.

The Iron Mountain pluton experienced rapid intrusion. The intrusion formed a dome of significant structural relief. Numerous gravity slide blocks exist along the eastern flanks. The intrusive bodies of the district are all porphyritic quartz monzonite with slight differences in chemical and metal compositions from one body to another. Phenocrysts make up about half of the volume of the quartz monzonite. They are plagioclase, augite, amphibole, and biotite.

The fact that Granite Mountain and Iron Mountain plutons have higher structural relief than the relatively flat-roofed form of The Three Peaks pluton accounts for their greater number of ore bodies; they have thicker interior zones with selvage joints than The Three Peaks pluton.

6.0 ORE DEPOSITS

Iron was derived from the plutons and deposited as either hematite-magnetite replacement bodies in the Homestake Limestone Member of the Middle Jurassic Carmel Formation near igneous contacts, or as magnetite veins in extension joints within the plutons. The replacement ore deposits in the district are in Jurassic limestone peripheral to the quartz monzonite intrusive. Magnetite fissure veins and screens, or pods, of replaced limestone occur within the intrusive masses. The intrusive and associated ore bodies comprise a zone approximately 3 miles wide and 25 miles in length, trending in a northeasterly direction. (Rowley and Barker, 1973)

Replacement ore bodies are as much as 230 feet thick and are almost totally confined to the Homestake Limestone Member. They are tubular pod-shaped bodies of hematite and subordinate magnetite that are scattered irregularly along the igneous contact but separated from it by the thin basal siltstone member. Silicon, magnesium, aluminum, and other elements were introduced into the deposits along with the iron. Replacement was volume for volume (Lewis, 1958; Mackin, 1968).

7.0 HYDROLOGY

7.1 SURFACE DRAINAGE

The Iron Mountain and Comstock mining district comprises an area of about 25 square miles all located in the Basin and Range physiographic province about 25 miles west of Cedar City, Utah. Drawing IM-0100-5 shows the hydrological drainage basin, springs, and well locations in relation to the mining areas, topographical and other features in the area.

No perennial streams originate or flow through the area, although some drainages experience intermittent flow from springs and several drainages are ephemeral having sporadic runoff from rainfall and snow melt.

The area is characterized by mountains and hills divided by unconsolidated alluvial-filled valleys covered with moderately sparse vegetation consisting primarily of sagebrush and pinyon/juniper trees. Elevations range between a high near 7800 feet on top of Iron Mountain to a low near 6000 feet in the valley floors to the east and west.

Iron Mountain serves as a drainage divide with runoff migrating eastward from the ridge near the Tip Top and Excelsior pits into Oak Springs Flat and westward from the ridge into Pinto Creek and southwesterly into The Dry Wash as shown on Drawing IM-0100-5.

Three springs have been identified in the general area. They are: Raddatz Spring in Section 24, T.36S., R.14W., Oak Spring in Section 31, T.36S., R.13W., Crystal Spring in Section 36, T.36S., R.14W. All the springs flow sporadically in response to seasonal recharge. None are used for culinary or mining purposes. None were sampled but the water is currently being used to water livestock and would seem to be at least of that quality.

Permanent ponds exist in the bottom of the Blowout, Duncan, Blackhawk, Burke and Pinto pits originating from surface runoff and groundwater inflow. The Comstock and Mt. Lion pits do not have permanent ponds due to mining activities but experience seepage along some fractures and formation contacts.

High erosional features are not evidenced in the area. This is primarily due to the higher permeability of alluvial soils, fractured bedrock and precipitation levels, which are only about 14 inches per year with an evaporation rate near 60 inches as determined from data recorded in the Beryl-Modena-Enterprise vicinity located about 35 miles west of the area.

The mean annual temperature in the area, as recorded in Modena by the only climatological station in the area with a long record, is 40°F with an estimated temperature range for the mining area between -13°F and 90°F (Mower, 1982).

Water resources in the area are used to support grazing, mining and wildlife. Other than Newcastle Reservoir located about 6 miles to the west, no recreational facilities, i.e., fishing or boating exist in the area.

7.2 GROUNDWATER

7.2.1 General

The Iron Mountain Mine and Comstock mining area is underlain by unconsolidated Quaternary alluvial sediments (sands, silts, and clays) in the valley floors and semi-consolidated to consolidated Jurassic/Cretaceous rock sediments in the mountains and hills. The Quaternary and Cretaceous sediments comprise the principle groundwater reservoir. Groundwater exists in the deeper Jurassic rock and along the iron ore contacts primarily in fracture planes (joints/faults) and along bedding planes. Flow is controlled by the fracture pattern systems, fault trends and attitude (strike and dip) of the bedrock. Permeability of the bedrock combined with fracture pattern flow controls the transmissivity (flow rate) of the aquifer(s).

Transmissivity data is not available in the study area but values can be expected to range from 1000 to 200,000 ft^2/day in valley fill to from 200 to 120,000 ft^2/day in the bedrock areas. Hydraulic conductivity (volume) of the respective aquifer systems and specific yield values are also unknown due to lack of pumping test data, but can be expected to be in the 50 to 500 ft./day range due to the complex structure and stratigraphic relationships in the area (Mower, 1982). Further complicating the flow systems are the intrusive bodies with associated faulting and fracturing.

The groundwater occurs in valley fills under both confined (artesian) and unconfined (water-table) conditions. The sediment with the highest yield potential are beds of well-sorted sand and gravel. Three (3) springs are present as described previously. Perched water table aquifers probably exist in certain valley fills and can be used for stock watering (Bjorkland, et al, 1978). No flowing wells exist within areas subject to reclamation or areas immediately adjacent to areas subject to reclamation.

Two deep non-flowing wells exist in the Iron Mountain/Comstock area (Drawing IM-0100-5). The wells are located in the SE 1/4 of the NW 1/4, Section 29, T.36S., R.13W., and the SE 1/4 of the NE 1/4 Section 2, T.37S., R.14 W. The wells in Sections 29 and 2 were drilled to depths of 130 and 360 feet, respectively. Wells in Sections 29 and 2 at one time were used for culinary purposes. Culinary water is currently hauled to the mining area from off-site. Process water for ore washing is obtained on site from ponds in the open pits. These wells are currently closed and unavailable for water sampling.

The potentiometric surface (water level) of the groundwater in the area generally parallels the topographic surface of the valley and mountain slopes except where mine excavations or major faulting occurs. Drawing IM-0100-11 shows the groundwater contour map across the Iron Mountain and Comstock mining areas. Information from water level measurements taken in the 1950's from exploration drill holes was used to compile the map using a groundwater - flow computer program. Water levels of standing water in the open pit ponds taken from June 1991 air photos were also used to evaluate and compare current groundwater level conditions with historic information. Geneva acknowledges that some data is historical, but still is a valuable tool for purposes of determining environmental impacts as discussed in Section 10.

7.2.2 Mining Areas

Groundwater flow conditions shown on Drawing IM-0100-11, Sheets 1 and 2, were developed from exploration test hole measurements taken by previous owners in the 1950's and 1960's prior to mining. Groundwater contours across the site was developed using the historic data base digitized for use in our Auto Cadd system utilizing a TerraModel program. Killam Associates of Pittsburgh, Pennsylvania performed the modelling for Geneva's file.

Since almost all of the historic test holes have been mined-out, it is not possible to obtain groundwater measurements for current potentiometric surface comparisons. However, a comparison of current standing water levels in the open pits, believed to be controlled primarily by groundwater plus surface runoff entry, indicates that groundwater levels have generally lowered across the site. This trend has resulted from seasonal differences during times of measurement, impacts on recharge from past 100 year peak flows (1983-84) and recent 5 year drought conditions, plus the effects of open pit mining into fault/fracture zones. It is understood that this data may not represent current groundwater conditions, but is the only data available as it is impossible to sample any remaining wells or drill holes.

A comparison of current standing water levels in the pits as shown on Sheet 1 of Drawing IM-0100-11 indicates that the current groundwater level in the Mt. Lion Pit is only slightly less (4-10 feet) than historic levels. This indicates that the recharge conditions and potentiometric surface in the pit, even though experiencing extensive mining activity, is not being seriously effected. Likewise groundwater flow contours up and down gradient of the pit do not show a break in continuity except within the open pit itself as expected. Flow gradient measurements to the south where contours are not effected by the pit show almost the same grade (18 percent) as measurements directly across the pit. As mining progresses in the pit, the groundwater level is expected to continue to conform with surrounding potentiometric forces and effects of recharge and evapotranspiration.

A comparison of current standing water levels in the open pits to historic water levels in the pit areas prior to mining indicates that the overall surface water level in the Iron Mountain mining area shown on Sheet 2 of Drawing IM–0100-11 has dropped between 12 and 100 feet, depending on pit locations. The Blowout Pit showed a drop of approximately 40 feet, the Pinto about 20 feet and the Burke about 12 feet. No projection into the Duncan Pit can be made due to lack of data. A water level drop of nearly 40 feet is indicated in the Blowout Pit shown on Sheet 1 of the drawing. Groundwater flow gradients across these pits show virtually no impacts from the Blowout Pit; moderate impacts from the Blackhawk Pit; no

impacts from the Pinto Pit and moderate to high impacts from the Burke Pit in the immediate pit area, but returning to near normal conditions within about 1/4 mile down gradient. This analysis should be considered tentative only, as water level data was not available for most of the area. In addition, faulting and fracturing which occurs in the pit zones further complicates prediction of the actual effect of the pits on groundwater levels.

Groundwater levels at key reclamation areas are as follows:

Drawing	Area	Estimated Feet To Groundwater
IM-0100-11 (Sheet 1)	Future Mt. Lion Dump	60
	Anthill Borrow	140
	Plant Area	80
	Maintenance Shops	100
	Future Comstock Dump	140
	Low Grade Ore Pile	292
	Tip Top/ Excelsior Pit	>500
IM-0100-11 (Sheet 2)	Load Out Facility	120
	Blackhawk Low Grade Ore Pile/Haul Road	191
	Burke Pit Haul Road	10-160

Effects on the mining area groundwater flow conditions by general geologic and structural features is also a factor in groundwater flow of the area. As shown on Drawing IM-0100-8, Geologic Map and as discussed in the text, the area is characterized by a pluton intrusive with the ore deposits situated along the flanks in sedimentary rocks. A complex series of fractures also exist in the flanks as parallel and cross faults. The complex series of faults located in the Mt. Lion Pit undoubtedly effects groundwater flow conditions as evidenced by the irregular and closed contour plots. Faulting also appears to effect groundwater flow near the "anthill" borrow area which shows irregular flow patterns. Intrusive contacts and associated faulting are also factors in groundwater flow conditions of the Blackhawk and Burke Pits where discontinuities exist seemly concordant to fault patterns and clusters. A cross-fault detected

in the area beneath the Maintenance Shops could also be responsible for the irregular groundwater flow pattern shown on Drawing IM-0100-11, Sheet 2.

Aquifer characteristics are predominantly fracture controlled, but assuming a porosity of the rock materials and fault fracture zones of near 10% and a permeability range from .050 to 500 feet per year, the groundwater flow velocity should range from .085 to 775 feet per year. This figure will vary according to differences in fracture pattern intensity, fault materials and continuity.

Recharge to the groundwater aquifer system in the area is primarily from snow melt and rainfall on Iron Mountain and other adjacent mountains to the south and west. Discharge of groundwater occurs primarily from springs and evapo-transpiration in open pit ponds. The remaining groundwater is discharged from the area by subsurface flow into valley fills to the north and southwest. Some groundwater is also stored in interstitial pore spaces and/or fractures of area sediments.

It must be noted that all information in this section was not compiled for a re-evaluation and re-permitting of prior permitted areas, but only to serve as a basis for understanding for any newly permitted areas.

7.3 WATER QUALITY

Water quality in the Iron Mountain and Comstock mining area is characterized by chemical analysis of samples taken in 1977 by previous owners. The samples were taken from three open pit ponds, the Blowout, Comstock and Duncan, and from the well in Section 29 located northeast of the Comstock and Mt. Lion pits. Since the waters ponded in the open pits are essentially a combination of groundwater and surface water runoff, it must be considered representative of the overall water quality in the area. However, analysis from the well can be used to represent groundwater quality only.

Evaluation of the data indicates that the water in the area can be classified as a magnesium, calcium bicarbonate type with moderate concentrations of sulfate and chloride. The water is very hard with moderately high conductivity, alkalinity, and total dissolved solids. Concentrations of nitrate and heavy metals, even iron, are low. Likewise, suspended solid levels are also low.

Results of a runoff sample taken in August 1991 showed low levels for indicator parameters required for a storm water runoff permit, (See Appendix B).

Based on the water quality data from prior abandoned pits, no degradation of water quality will occur in or around the Comstock/Mountain Lion pit upon completion of mining except for a local drop in the water table adjacent to the pit. Based on established water levels in other abandoned pits and based on groundwater contours in Drawing IM-0100-11 and water levels that occurred during a cessation of operation of the pit in the 1980's, it is anticipated that pit water levels upon a cessation of mining will be at an elevation of approximately 6240 feet.

8.0 SOIL CONDITIONS

A general soils map of the mine area is shown in Drawing IM-0100-2. A third-order equivalent survey is not available for the mine area. This map has been adapted from an unpublished preliminary U.S. Department of Agriculture Soil Conservation Service Map (Simper, 1977). Recent field work has further delineated the findings in that report. The soil types identified in the area are described as follows:

LMC - Lucero, Gravelly Sandy Loam (2 to 8 Percent Slopes)

This is a well drained soil that occurs on alluvial fan terraces. It formed in alluvium derived dominantly from intermediate igneous and sedimentary rocks. Slopes are long and single in shape. Elevation is 5,500

to 6,200 feet. The average annual precipitation is about 12 to 14 inches. The mean annual air temperature is 45 to 48 degrees F, and the average freeze-free period is 80 to 110 days.

Typically, the surface layer is brown gravelly sandy loam 3 inches thick. The upper 13 inches of the subsoil is brown gravelly clay loam. The lower part to a depth of 60 or more inches is light brown and pinkish gray very gravelly sandy loam. A layer of carbonate accumulation is at a depth of about 16 to 60 inches. In some areas, the surface layer is very gravelly loam or very gravelly sandy loam.

Permeability of this soil is moderately slow. Available water capacity is low. Water supplying capacity is 7 to 9.5 inches. The organic matter content of the surface layer is 1.7 percent. Runoff is medium and the hazard of water erosion is moderate.

CJG - Ironco / Delson Extremely Cobbly Loams (25 to 60 percent Slopes)

This map unit is on mountainsides. Slopes are medium to long in length and concave-convex. Elevation is 6,400 to 8,000 feet. The average annual precipitation is about 12 to 16 inches. The mean annual air temperature is 43 to 46 degrees F and, and the average freeze-free period is 70 to 90 days.

This soil has a variable depth due to its presence on steep slopes, but is generally extremely shallow. In the areas subject to reclamation, the average depth to bedrock is 10 inches. The parent material is principally the intrusive rock which comprises the bulk of Iron Mountain. Salvageable topsoil is not generally present in this unit.

M-1 - Pre Act Disturbed Areas

This area does not contain any recognizable soils but consists of bare bedrock, overburden piles, and ore piles.

M-2 - Overturned Disturbed Mining Area

This area consists of soil material that has been disturbed by an alluvial iron ore recovery machine. Portions have been revegetated. The materials were originally LMC soil. Organic content is around 1 to 2 %.

Various topsoil or topsoil substitute sample analyses are contained in Appendix D.

9.0 VEGETATION

9.1 SURVEY

Groundcover was determined by ocular estimation, using a three-foot diameter hoop, and taking readings every 50 feet along transects in each of the areas to be disturbed. Thirty plots were read, with the average cover being as shown on Table 1.

Table 1

Areas	Percent Cover
Total Vegetation	54%
Trees	45%
Shrubs	6%

Perennial Grass	0%
Perennial Forbs	2%
Annuals	1%
Litter	5%
Surface Fragments	30%
Bare Ground	11%

Photo Plate 1 and 2 shows vegetation typical at the site. Drawing IM-0100-1 (Sheets 1-6) are air photos that also show typical vegetation cover at various locations of the site. Vegetation identified at the mine site is as follows:

Crested Wheatgrass (Agropyron desertorum)

Intermediate Wheatgrass (Agropyron intermedium)

Indian Ricegrass (Oryzopsis hymenoides)

Squirreltail (Sitanion hystrix)

Purple Three Awn (Aristada purpurea)

Palmer Penstamon (Penstamin palmeri)

Yellow Sweetclover (Melilotus officianalis)

Rubber Rabbitbrush (Chrysothamnus naseosus)

Cliffrose (Cowania mexicana)

Antelope Bitterbrush (Purshia tridentata)

Curl Leaf Mountain Mahogany (Cercocarpus Ledifolius)

Fernbush (Chamaebatiaria millefolium)

Utah Juniper (Juniperus Osteosperma)

Pinion Pine (Pinus edulis)

Sagebrush (Artemisia tridentata)

Oakbrush Sumac [Squawbush] (Rhus trilobata)

9.2 FINDINGS

The majority of the undisturbed areas adjacent to the mining areas could not be considered "naturally occurring" as this area was subject to overgrazing in the early part of the century which allowed pinion and junipers to invade areas that were previously shrub and grass environments (Simper, Personal Communication, 1991).

The average total vegetation cover percentage (54%) is probably not an accurate picture of what the cover would be considering a shrub/grass environment. Transects in nearby shrub and grass environments show a total vegetation cover of closer to 40%. A 40% cover of shrubs/grasses is superior and more desirable than a 54% cover of junipers and pinions for this area. In 1977, the Soil Conservation Service rated these juniper and pinion areas as undergoing "severely active" erosion and containing 1/4 of the potential range yield normal for the site (Simper, Personal Communication, 1977).

Assuming a 70% cover standard of "normal" shrub/grass environments of the area would result in a revegetation requirement of 28% in a shrub/grass regime and 37.8% for a pinion/juniper regime. Since all revegetation efforts at the site are directed at a shrub/grass regime because it is the better and original regime, any areas potentially subject to the 70% revegetation standards should be set at 28% as opposed to 37.8%.

9.3 RECOMMENDATIONS FOR SEEDING

Revegetation test plots were established at the Comstock Mine Area from 1977 to 1981. Results pertinent to reclamation are as follows:

1. Amount of fine material in soil was principal controlling factor in revegetation efforts.

2. Fertilization had little effect on revegetation success.

3. Fourwing saltbush is not a successful reclamation species in this area. Bitterbrush establishes itself quite well.

4. Intermediate and Crested Wheat Grass are superior revegetation grass species to Thickspike and Bluebunch Wheatgrass.

5. Northern Sweetvetch is not native and does not survive in the area. Palmer Penstemon establishes itself well, even on steep slopes. Yellow Sweetclover also does well.

6. The recommended broadcast seed mix for areas not previously permitted based on these studies in terms of Pure Live Seed (PLS) is as follows:

Common Name	Species Name	Rate lbs./acre
Hycrest Crested Wheatgrass	Agropyron Cristatum 'hycrest'	1.0
Indian Rice Grass	Oryxopsis Hymenoides	1.5
Piute Orchard Grass	Dactylis Glomerata	1.0
Great Basin Wildrye	Elymus Cenerius	2.0

Inter. Wheatgrass	Agropyron Intermedium	2.0
Ladac Alfalfa	Medicago Sativa	2.0
Yellow Sweetclover	Melilotus Officinalis	1.5
Small Burnett	Sangvisorba Minor	2.0
Palmer Penstemon	Pentemon Palmeri	.5
Rabbitbrush	Chrysothamnus Nauseous	.5
Curleaf Mtn. Mahogany	Cerococarpus Ledifolius	1.0
Bitterbrush	Purshia Tridentata	1.0
Mountain sagebrush	Artemisia Tridentata Vaseyana	0.1
Forage kochia	Kochia Prostata	0.5
	Totals	16.6

When drill seeded, the broadcast rate will be reducted by 1/3.

The operator will reserve the right to alter this seed mix depending on relative availability of the seed. If such an eventuality arises, DOGM will be duly notified.

10.0 ENVIRONMENTAL IMPACT ASSESSMENTS FOR AREAS NOT PREVIOUSLY PERMITTED

A maximum 3 to 4 acres per year may be disturbed during the life of the operation, and will be reclaimed except those areas with approved variances. Most of this area has been previously permitted. The following impacts of disturbance on unpermitted areas are expected (U.S. BLM, 1984):

- Impacts to soils and vegetation will be moderate as previously discussed.

  After reclamation, a cover of native shrubs and grasses will be established on the disturbed areas, recognizing that certain Pre-Act areas may require a variance due to lack of any vegetative or

topsoil resource prior to Geneva's operation. Several years may be required before trees grow in these areas. However, portions of this area may not be re-populated with trees as certain areas were probably originally a shrub and grass environment before over grazing in the early part of the century allowed encroachment of the trees into the shrub and grass domain (Simper, 1991, Personal Communication).

- No impacts to groundwater are expected. Mine wastes sampled where old pits have intersected the groundwater and a well sampled in areas located immediately adjacent to the older mining sites indicates no affect on water quality on previously permitted areas. Groundwater recharge in the area does not appear to be affected by Geneva's mining operation on previously permitted areas.

It is understood that a "baseline" groundwater quality study has not been performed in the area and would be impossible to accurately perform, given existing conditions (on available sampling access, etc.) Geneva's basis for asserting that no groundwater impact will occur for newly permitted areas is that there is no current indication of any groundwater impact on previously permitted areas, and such was already determined by the Division of Environmental Health of the State of Utah (currently the Division of Environmental Quality (DEQ)).

In addition, Geneva Steel is currently under the notification/application process as required by DEQ regulations (See discussion in Appendix E). This process is not yet complete, but Geneva will maintain compliance with DEQ standards. Geneva believes compliance with DEQ's groundwater discharge regulations should satisfy any DOGM concerns regarding any potential impact to groundwater from nearby permitted areas.

- Impact to surface waters is also not expected. All previously permitted and new areas are currently permitted under a NPDES Stormwater Discharge Group Permit (See Appendix E) which includes erosion control as well as water quality protection. Geneva will maintain compliance with this permit until final reclamation is completed. The standards of such permits are to "protect human health and the environment" and would thus guarantee minimal impact on water quality.

- Slope stability impacts for newly permitted areas are discussed in Appendix F.

- Existing soil resource impact issues are discussed in Section 8 and the Reclamation Plan (Section 12.3).

- There will be no air quality impacts after completion of mining. Geneva Steel currently operates its mines within all applicable Federal and State air quality regulations.

- Threatened or endangered species or critical habitats have not been identified at the site (BLM, 1984). In addition, the Division of Wildlife Resources has determined that there is no significant effect by ongoing mining operations on deer that may winter in that area (Personal Communication, Floyd H. Coles, 1977)

- The potential for acidic runoff from mine drainage is very low based on chemical ore and rock materials, plus results of sampling conducted in 1991 for potential of acid and neutralization using EPA methods for overburden waste, lean ore and plant waste. (See Appendix D). Composite samples of approximately 10 lbs. each were taken of representative materials identified in the sample sheets and were analyzed using the method recommended by DOGM personnel (Method 3.2.3/4).

- Public access to the mine is currently restricted by posting of signs and blocking nonessential access roads.

- No new impact is anticipated to the Cedar City area, economic or otherwise, from newly permitted areas of the mine operation as employment at the mine will remain somewhat constant.

11.0 GEOLOGIC HAZARDS

No naturally occurring landslide masses or scarps were found in the Iron Mountain/Comstock mining areas. Even though steep slopes exist along the flanks of the Iron Mountain pluton (intrusive) the rock units appear to have a relatively high slope stability factor. Soil slippage and creep was also found to be minimal due to the shallow topsoil cover over hard-rock areas and the low precipitation levels resulting in more seepage and evaporation than runoff. Rock fall is evident along some of the steeper slopes where hard-rock faces are exposed. Unconsolidated Quaternary deposits existing on side-slopes and as valley fill do not exhibit high erosional characteristics. The possibility of property damage or personal injury is low.

Heavier than normal summer cloudbursts could produce flash floods in the arroyo's of Oak Spring Canyon, Dry Wash and within small tributary drainages near the open pits. Some debris flows might be generated during such activity and create low to moderate erosional channels. However, these areas are all outside areas under current application.

Moderate sloughing of exposed hard-rock in the north-west corner of the Mountain Lion Pit is evident since mining occurred. However, the bench definition is still discernable and no impact to mining activity has occurred. Another area where some instability is evident is near the north end of the old Pinto Pit where sloughing is evident along the ore-bedding plane contact. Again, the activity is not severe and has

not hampered operations and does not present a threat to human life. These areas are subject to prior permits and are not part of areas under current application.

The Utah Seismic Safety Advisory Council classifies the general area within the U-2 zone with a seismic zone rating of 2 for the Uniform Building Code. As discussed earlier, numerous seismic events, all less than 5 on the Richter Scale have occurred within 50 miles of the mining area but no recorded evidence of disturbance to the mining facilities have occurred. Several seismic events between 0.9 and 3.8 were recorded in 1991 along the Hurricane Fault located approximately 50 miles to the northwest of the area in Parowan Valley. No damage was reported from this activity.

12.0 MINING OPERATIONS

12.1 GENERAL

Prior permitted areas are identified on Drawing IM-0100-3a. Prior permits were issued with specific approval of reclamation plans and variances, etc. As mentioned previously, these areas are not being resubmitted but are merely being compiled and summarized together in one document for ease of use and to allay confusion regarding the appropriate reclamation plan for a given area. In many instances, disturbance may not have yet proceeded to cover the entire permitted area. For this reason, for purposes of surety calculations, those areas currently disturbed in a prior permitted area as well as projected disturbances for the next five years in prior and newly (under application) permitted areas are included in the Reclamation Summary Chart, and on Drawing IM-0100-3. The Reclamation Summary Chart contains a description of the reclamation for each area. These areas correspond to a respective area on each map, and can be referenced by the map legend.

Geneva Steel will also comply with all requirements of Utah Administrative Code (1993) R647-4-107, recognizing that information regarding this compliance is not required in a permit application pursuant to R647-4-103.

Geneva, at the request of DOGM, is providing information involving implementation of R647-4-107 and has included this information as Appendix E. The information and operational practices as described are not considered permit conditions, and thus may be changed at Geneva's discretion, without a permit revision or amendment, understanding that the mining activity must operate and comply with the conditions of R647-4-103.

12.2 PRIOR PERMITTED AREA RECLAMATION PLAN SUMMARIES

See the Reclamation Summary Chart where each area is identified by the Prior Permit which established it's reclamation.

12.2.1 M/021/008 AND M/021/003 [Original USX Properties]

Reclamation Standards:

1. Pits: Open pits will be left open, except the Yellow Jacket Pit, which will be partially filled with overburden material. A six foot high safety rick of run of mine waste rock will be dumped around all pit perimeters for safety purposes. On lower 2 bench levels where room is adequate, rocky rubble will be pushed to lower level of the pit, and areas bumped up from shooting will be smoothed out. 2-3 inches of topsoil will be placed on lower 2 benches where feasible and seeded. Lower level of pit would be allowed to form a natural lake.

2. Waste Dumps: Dump crests will be rounded when through in conformance with surrounding topography. Dump tops will be contour scarified and reseeded. The maximum grading slope was set at 40°.

3. Topsoil: No topsoil recovery for Pre-Act disturbed areas required as no significant recoverable topsoil exists. Existing topsoil substitutes may be used where topsoil salvage is not possible or practicable.

4. Revegetation:

A. Soil treatment: Soil treatment will consist of mulching or contour scarifying on sloping areas, drilling only on flat areas with depth depending on degree of compaction. Ammonium nitrate and phosphate fertilizer will be applied if necessary.

B. Broadcast Seed Mix:

Yellow Sweetclover	1 lb./acre
Alfalfa	1 lb./acre
Fairway Crested Wheatgrass	4 lb./acre
Intermediate Wheatgrass	4 lb./acre
Russian Wildrye	1 lb./acre
Fourwing Saltbush	2 lb./acre
Indian Ricegrass	1 lb./acre
Total	14 lbs./acre

Seed mix may be varied (species and/or rates) for each area at operator's discretion.

C. Planting will be in the fall with a one time application of water with water truck. Seeding efforts will be concentrated on areas where success is feasible. Seeding of extremely rocky mine dump slopes is not necessary.

5. Haul roads not subject to post-mine use will be scarified and reclaimed.

6. Structures put in service and remaining unusable will be removed, regraded, recontoured, and reseeded, bringing surface to natural configuration.

7. Fencing will remain in place or be installed around all waste dumps.

8. Remove extraneous debris, trash, and equipment.

Variances:

1. Open pits will be left in place (Rule M-10(3,13)). Extremely rocky pit slopes will not be seeded.

2. The Iron Mountain Livestock Road (previously the access road to the Blackhawk Lean Ore Pile) will serve as livestock ranching access for post-mine use as well as a possible future haul road if mining in that area becomes feasible.

3. 70% revegetation standard has been waived. Operator is required to establish a minimum cover of beneficial vegetation, if possible. If operator has used practical methods which are those specified in the permit (scarifying and reseeding) and minimal cover of beneficial vegetation is not met, this standard is also waived.

4. Topsoil recovery not required for Pre-Act areas.

5. Waste dumps may be placed in natural drainage channels (Rule M-10(8)).

12.2.2 M/021/005 [Original CF&I Properties]

Reclamation Standards:

1. Pits: Open pits will be left open. Fences or berms will be placed along remaining accessible highwalls. Pit bences will be broadcast seeded where accessable.

2. Lean Ore and Overburden Dumps: Dump tops will be graded and scarified 4 to 6 inches deep. Maximum angle of slope allowed is 37°. Surface drainage contours will be established for prevention of water ponding.

3. Topsoil: No topsoil recovery required as no significant recoverable topsoil exists. An effort will be made, as discussed below, to develop a suitable plant support medium.

4. Revegetation:

   A. Soil Treatment: Fines generated in mining will be used as a growing medium. Fines will be spread and then scarified 4 to 6 incbes. A straw mulch will be applied.

   B. Broadcast Seed Mix:

Yellow Sweet Clover	1 lb./acre
Ladale Alfalfa	1 lb./acre
Fairway Crested Wheatgrass	4 lb./acre
Oahe Intermediate Wheatgrass	4 lb./acre
Russian Wildrye	1 lb./acre
Four Wing Saltbush	2 lb./acre
Nezpar Indian Ricegrass	1 lb./acre
Total	14 lb./acre

   C. Planting will be in the fall.

5. Haul roads and compacted surfaces will be scarified and graded to a smooth contour and revegetated.

6. Structures put in service and remaining unusable will be removed.

7. Remove extraneous debris, trash, and equipment, including surge pond piping and improvements.

Variances:

1. Open pits do not require reseeding or regrading.

2. Some access roads (Iron Mountain Haul Road and Crystal Springs access) will serve as livestock ranching access for post-mine use.

3. 70% revegetation standard has been waived but vegetation cover should be attempted where possible. If operator has used practical methods which are those specified in the permit, the revegetation standard has been met.

4. Topsoil recovery not required.

5. Minor drainages may be filled (Rule M(10(8)).

12.2.3. M/021/001 [Original Utah International, Inc. Properties]

Reclamation Standards:

1. Waste Dumps: Rounding of dump crests. 2 to 1 slope angles.

2. Topsoiling: No topsoil recovery required for pre-existing areas of disturbance.

3. Revegetation:

A. Soil treatment: Scarification only on dump crests and across portions of dump slope safely accessible by mining equipment. No soil amendments.

B. Seed mix, planting during fall:

Species	Lbs./Acre
Luna Pubescent Wheatgrass	2
Rosana Western Wheatgrass	2
Siberian Crested Wheatgrass	2
Paloma Indian Ricegrass	1
Alfalfa	1
Yellow Sweet Clover	1
Small Burnet	1
Antelope Bitterbrush	.25
Fairwing Saltbrush	.25
Nevada Ephedra	.25
Winterfat	.25
Total	11

Seed mix may be varied (species and/or rates) for each area at operator's discretion.

Seeding by range drilling along the contour wherever topography permits, inaccessible areas will be broadcast seeded.

4. Haul roads will be scarified and graded to a smooth contour, and then reseeded. Earthen barriers will be constructed where applicable to prevent unauthorized traffic.

5. All surface debris will be removed from the site.

Variances:

1. Some haul roads (Crystal Springs access road) will serve as livestock ranching and third party property access for post-mine use.
2. 70% revegetation standard may be waived on Pre-Act areas. Operator is required to established a minimum cover of beneficial vegetation, if possible. If operator has used practical methods which are those specified in the permit and minimal cover of beneficial vegetation is not met, this standard may be waived.
3. Highwall and natural drainage blocking variance.

12.2.4 S/021/010 [Excelsior/Chesapeake]

Permitted as 5 acres of disturbance. Now subject to R647-4-107, 110 and 111.

12.3 RECLAMATION PLAN FOR AREAS UNDER APPLICATION (Tip Top, Excelsior/Chesapeake Extension, Burke Pit Road)

Reclamation Plan:

The Burke Pit Road is identified on Drawing IM-0100-3 (Sheet 2). The Tip Top Area and the Excelsior/Chesapeake Area are identified on Drawing IM-0100-3 (Sheet 4). The FAA/Ore access road to these areas is shown on Drawing IM-0100-9. It is not projected that any further disturbances except those identified will occur in any of these areas over the life of the mine. The Reclamation Plan for these areas is as follows:

1. Topsoil Recovery: No salvageable topsoil exists in any of these areas. The principal FAA/Ore Haul Road was a pre-act disturbed area (although the road has since been widened somewhat). The Burke Pit Road was also entirely a pre-act disturbed area. In the Tip Top and Excelsior

areas, Geneva Steel proposes to use suitable topsoil or topsoil substitute available from prior permitted areas to match the current depth of topsoil in the area which is approximately 4 to 6 inches. The area from which topsoil or topsoil substitute will come is found in Drawing IM-0101-6 and is identified as the Blowout Topsoil Borrow Area. Samples taken from the area are found in Appendix D.

2. Soil Preparation and Roads: The FAA/Ore Haul Road up to the FAA turnoff is no longer under Geneva's legal control and has been transferred to the FAA for use as an access road. Any further reclamation is contigent upon obtaining written approval from the FAA and upon being in agreement with the Division on which areas reclamation is feasible. The Burke Pit Road will be scarified, bermed on the downslope shoulder, reseeded, and mulched. Signs and barricades will be installed to prevent access. The Excelsior and Tip Top area will be reseeded, drilled and covered with mulch. Berms will be placed along the downslope side of the road to minimize erosion of newly placed soil. The portion of the Excelsior access road past the post-mine use portion of the road will be bermed to prevent vehicle traffic. Signs and barricades will be placed at the road entry to prevent unauthorized trespass. Warning signs and a berm will be placed along unstable areas adjacent to the Tip Top road to prevent access. All roads will be ripped by dozer to a depth of 1-2 feet in addition to any scarification. Areas to be reseeded will receive ammonium phosphate/potassium nitrate fertilizer or equivalent at 100 pounds per acre, prior to scarification or the spring following seeding. Scarified areas will be ripped or disked to a 6-inch depth where feasable with a maximum one-foot distance between rippers or disks after topsoil spreading prior to seeding.

3. Mulch and Seed Mix: The recommended seed mix as contained in Section 9.3 will be used in all areas. Twenty-five hundred (2500) pounds per acre of hydromulch product or 2000 pounds

per acre of hay/straw mulch (compiled into the soil) will be used. Planting will take place in the fall. Drill seeding will occur where possible. The area will be raked and dragged after seeding.

4. Pits/Dumps: Pit highwalls will be reduced by blasting to approximately a 1:1 slope to match adjacent native slope angles. Available waste rock dump materials will be pushed back into the Excelsior Pit using dozers. Waste dumps in these areas are located on existing steep slopes and the angle of repose very nearly matches the slope of adjacent side slopes. No access is available to these dump slopes. Dump tops will be contoured, scarified and hydroseeded. Geneva proposes to push fine material from the crest of the slope onto the dump slopes. These areas will be hydroseeded (including fertilizer, mulch and tackifier). The Tip Top and the Excelsior Pit did not encounter any groundwater and will not impound water upon final reclamation.

5. Mitigation: A pre-law disturbed area not subject to reclamation will be selected and reclaimed under standards specified in this section. This will include six and six-tenths (6.6) acres, equivalent to a 2:1 ratio of acreage which is unable to be reclaimed due to slope stability. Although this area has not been identified yet, the surety numbers have been included in this document.

Appropriate cross-sections of pit areas are found in Drawing IM-0101-1.

Requested Variances: (See also Variance Maps)

1. Post mine land use includes use of the KSUB/FAA access road. This variance was granted in December 22, 1993 correspondence with conditions. KSUB radio and TAC-TEC have also requested the use of an area in the Tip Top Pit area for use as a storage area. Letters identifying KSUB and TAC-TEC's continuing responsibility are included in Appendix G. The west portion

of the Excelsior access road prior to the turnoff to the pit will remain open for use by other mining claim owners in the area.

2. Slope variances for regrading are requested on dump slopes due to the steep adjacent topography and lack of access to the dump slopes. (See Appendix F)

3. Revegetation variance on the pit highwalls was granted in the December 22, 1993 correspondence with conditions.

4. A revegetation variance is requested on the Pre-Act disturbed areas as specified on Pre-Act and Variance drawings. The request is for a variance from the 70% vegetation success standard. An alternate vegetation standard of 50% of the vegetation that is supported in the surrounding area is proposed. Geneva will perform reclamation on these areas the same as on a non-Pre-Act disturbed area. The variance request is based on the fact that other smiliar areas already reclaimed under prior permits have not been able to reach the 70% standard even after extensive reclamation.

5. Hole plugging requirement variance was granted for mined through holes in December 22, 1993 correspondence.

6. A topsoil salvaging variance is requested as no salvagable topsoil exists. Substitute topsoil will be brought in from the borrow area near the Blow Out Pit.

Geneva Steel will also comply with all requirements of R647-4-111, recognizing that information regarding this requirement is not required pursuant to R647-4-103. In response to the Division's request, recognizing R647-4-111 requirements are not permit conditions, Geneva does not anticipate burying any

equipment or facilities on-site for areas covered by this application. All trash and debris are disposed of off-site at an appropriate landfill.

12.4 TOXIC MATERIALS

Deleterious or acid forming materials are nonexistent on the property. Oils and other wastes are kept in containers and returned to refineries or disposed of off-site. No hazardous wastes exist or are generated on the site, thus cleanup or closure is not expected.

Three materials at the mine site were sampled for maximum acid potential and neutralization potential; overburden waste, lean ore, and wet plant waste. These materials are representative of all onsite materials. Sample results are contained in the Appendix D. These samples indicate that there is little potential for acid mine drainage from these materials. This is to be expected since the ore body does not contain sulfides, and iron mines have never been known to produce acid mine drainage. (USEPA, 1978)

13.0 SURETY ESTIMATE

Prior permitted areas and areas subject to this application are identified on Drawings IM-0100-3a. As was previously mentioned, the permitted areas are larger than the areas of current disturbance or areas which will be disturbed in the next five years. This is true simply because of the long term life of a base metal mine. The surety estimate was arrived at by determining total reclamation costs for currently disturbed areas subject to reclamation as well as total costs for those areas to be disturbed in the next five years. These areas are identified in Drawings IM-0100-3. Calculations and descriptions of reclamation requirements are included in Appendix A. A summary of each of the areas and factors relevant to the reclamation status (pre-act disturbance, etc.) is found in Section 12.2. Backup information for purposes of volume calculations is also found in Drawings IM-0101-1 through IM-0101-8. Geneva understands that

modifications to the surety are required at the end of the five year reclamation plan or if, prior to the end of the five year period, areas will be disturbed which are outside of the five year reclamation plan area.

14.0 CONCLUSIONS

Past and present mining operations within the Iron Mountain and Comstock/Mountain Lion districts have low to moderate impacts on the environment. Likewise, planned future mining activities should not increase environmental impacts and should even result in less impacts since most of the activity over the next 5 to 10 years will be in areas already being mined and under planned reclamation.

Site conditions were found to be normal for this specific Basin and Range location. No major geologic hazards are known to exist in the immediate vicinity and potential impacts from regional seismic activities are reported as low to moderate. Geologic features, even though somewhat complex from peripheral and cross-bed faulting and folding around the edges of the Iron Mountain pluton, tend to control surface and groundwater flow into set patterns.

Effects of the mining operations on the general hydrology seem to be minor and have not caused significant impacts to normal flow patterns except where pit ponds have been created, which continue to recharge the aquifer(s). Past reclamation efforts have been largely successful to date. Future reclamation programs will be carried out as approved in the Application and monitoring of reclamation efforts will continue until success is achieved.

15.0 REFERENCES

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